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AF/IFW
 Docket No.: 510.1073
 Date: November 8, 2005

In re application of: Thomas BEISSWENGER, et al.
 Serial No.: 10/613,557
 Filed: July 3, 2003
 For: MEMBRANE MODULE FOR HYDROGEN SEPARATION

Sir:

Transmitted herewith is a **Appeal Brief (12 pages)** in the above-identified application.

- ☐ Small entity status under 37 C.F.R. 1.9 and 1.27 has been previously established.
☐ Applicants assert small entity status under 37 C.F.R. 1.9 and 1.27.
☒ No fee for additional claims is required.
☐ A filing fee for additional claims calculated as shown below, is required:

(Col. 1)		(Col. 2)		SMALL ENTITY		OR	LARGE ENTITY	
FOR:	REMAINING	HIGHEST		RATE	FEE		RATE	FEE
	AFTER	PREVIOUSLY	PRESENT					
	AMENDMENT	PAID FOR	EXTRA					
TOTAL CLAIMS	* Minus 20	=	0	x \$ 9	\$		x \$ 18	\$
INDEP. CLAIMS	* Minus 3	=	0	x \$ 44	\$		x \$ 88	\$
FIRST PRESENTATION OF MULTIPLE DEP. CLAIM				+ \$150	\$		+ \$300	\$
				TOTAL:	\$	OR	TOTAL:	\$

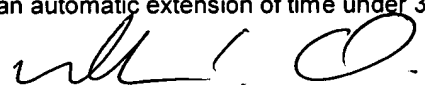
- * If the entry in Co. 1 is less than the entry in Col. 2, write "0" in Col. 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, write "3" in this space.

- ☐ Also transmitted herewith are:
☐ Petition for extension under 37 C.F.R. 1.136
☐ Other:

- ☒ Check(s) in the amount of **\$500.00** is/are attached to cover:
☐ Filing fee for additional claims under 37 C.F.R. 1.16
☐ Petition fee for extension under 37 C.F.R. 1.136
☒ Other: **Fee for Appeal Brief under 37 C.F.R. §41.20(b)(2)**

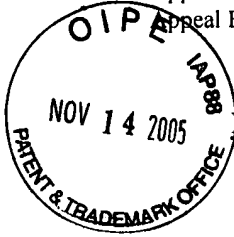
- ☒ The Assistant Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 50-0552.

- ☒ Any filing fee under 37 C.F.R. 1.16 for the presentation of additional claims which are not paid by check submitted herewith.
☒ Any patent application processing fees under 37 C.F.R. 1.17.
☒ Any petition fees for extension under 37 C.F.R. 1.136 which are not paid by check submitted herewith, and it is hereby requested that this be a petition for an automatic extension of time under 37 CFR 1.136.


 William C. Gehris, Reg. No. 38,156
 (signing for Thomas P. Canty, Reg. No. 44,586)
 DAVIDSON, DAVIDSON & KAPPEL, LLC
 485 Seventh Avenue, 14th Floor
 New York, New York 10018
 Tel: (212) 736-1940
 Fax: (212) 736-2427

I hereby certify that the documents referred to as attached therein and/or fee are being deposited with the United States Postal Service as "first class mail" with sufficient postage in an envelope addressed to "Mail Stop: Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" on November 8, 2005.
 DAVIDSON, DAVIDSON & KAPPEL, LLC

BY: 
 Oliver Platz



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Re: Application of: Thomas BEISSWENGER, et al.
Serial No.: 10/613,557 Confirmation No.: 6607
Filed: July 3, 2003
For: MEMBRANE MODULE FOR HYDROGEN
SEPARATION

Art Unit: 1724
Examiner: Robert H. SPITZER
Customer No.: 23280
Atty. Docket: 510.1073

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

November 8, 2005

APPELLANTS' BRIEF UNDER 37 C.F.R. § 41.37

Sir:

Appellants submit this brief for the consideration of the Board of Patent Appeals and Interferences (the "Board") in support of their appeal of the Final Rejection dated June 7, 2005 in this application. The statutory fee of \$500.00 is paid concurrently herewith.

1. REAL PARTY IN INTEREST

The real party in interest is DaimlerChrysler AG, a German corporation having a place of business in Stuttgart, Germany, and the assignee of the entire right, title and interest in the above-identified patent application. The invention was assigned by inventors Beisswenger, Berger, Poschmann, Reiners, Weger and Wiesheu to DaimlerChrysler AG. The assignment was recorded on July 3, 2003 at reel 014273, frame 0858.

2. RELATED APPEALS AND INTERFERENCES

Appellants, their legal representatives, and assignee are not aware of any appeal, interference or judicial proceeding that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.

3. STATUS OF CLAIMS

Claims 1-14 and 16-19 are pending. Claim 15 has been canceled. Claims 1-14 and 16-19 have been finally rejected as per the Final Office Action dated June 7, 2005.

The rejection to claims 1-14 and 16-19 thus is appealed. A copy of appealed claims 1-14 and 16-19 is attached hereto as Appendix A.

4. STATUS OF AMENDMENTS AFTER FINAL

An amendment to claim 12 was filed after the final rejection to correct a typographical error. The amendment was entered with the advisory action of August 16, 2005. A Notice of Appeal was filed on September 6, 2005 and received by the U.S.P.T.O. on September 9, 2005.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 1 recites a membrane module for hydrogen separation, comprising a stack of flat membrane packs (e.g., 12 in Fig. 5, e.g., specification at paragraph [0047]) disposed adjacent to one another so as not to exert a force on one another, a feed space for a reformat gas (e.g., specification at paragraph [0049]) disposed between every two membrane packs in the stack, each membrane pack having a pair of membrane assemblies (e.g., 2 in Fig. 3, e.g., specification at paragraph [0057]) and a support structure (e.g., 8 in Fig. 3, e.g., specification at paragraph [0057]) disposed between the pair of membrane assemblies, each

membrane assembly including a hydrogen-selective flat membrane (e.g., 4 in Fig. 3, e.g., specification at paragraph [0045]) supported by at least one membrane frame (e.g., 6 in Fig. 1, e.g., specification at paragraph [0044]); a rotationally symmetrical pressure shell (e.g., 20 in Fig. 3, e.g., specification at paragraph [0052]) enclosing the stack of flat membrane packs; and a device for creating gas turbulences (e.g., specification at paragraph [0076]) disposed in at least one of the feed spaces.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-8, 13, 14, 16, 18 and 19 should be rejected under 35 U.S.C. §102(b) as being anticipated by the membrane module structure of Harlow (U.S. 2,618,357).

Whether claims 9-12 should be rejected under 35 U.S.C. §103(a) as being unpatentable over Harlow in view of McBride et al. (U.S. 3,336,730).

Whether claim 17 should be rejected under 35 U.S.C. §103(a) as being unpatentable over Harlow in view of WO 01/70376.

7. ARGUMENTS

Rejections under 35 U.S.C. §102(b)

The issue presented is whether claims 1-8, 13, 14, 16, 18 and 19 should be rejected under 35 U.S.C. §102(b) as being anticipated by the membrane module structure of Harlow (U.S. 2,618,357).

Harlow describes a frame diffusion apparatus for the separation and concentration of gases by diffusion. Harlow describes a unit having a substantially cylindrical sheet metal shell 10 that is closed at each end by flat circular heads 11. A stack of frames 25, each having the form of a hollow rectangle or square, is mounted within the shell 10. Curved members are secured to the interior of shell 10. Each of the members 64 includes two rows of holes 68.

The holes 68 are located “near the face of the shell 10 so that gas flowing through the holes toward the frames 25 is not discharged directly at the frames 25 and so that gas discharged from the passes between the frames 25 is not discharged directly at the holes 68.” See, Harlow, column 8, lines 40-45.

Claim 1 recites a membrane module for hydrogen separation that includes, among other features, a stack of flat membrane packs, “a feed space for a reformat gas disposed between every two membrane packs in the stack,” and “a device for creating gas turbulence

disposed in at least one of the feed spaces.” Support for the feature is found in the Applicant’s specification, for example, at paragraphs [0076] through [0080] (e.g., plate-shaped porous components 42) and in Fig. 12.

Applicants respectfully submit that Harlow does not describe at least the feature of a device for creating gas turbulence disposed in a feed space. The Examiner has identified the holes 68 of Harlow as corresponding to “a device for creating turbulence” because they “would cause the feed gas to diffuse out into the cylindrical shell for flow through the membrane device.” Final Office Action, at page 3.

Applicants submit that the Examiner’s assertion that holes 68 can be deemed “a device for creating turbulence” as the feature is recited in independent claim 1 is incorrect for at least two reasons. First, the language of claim 1 recites that the device for creating turbulence is disposed in at least one of the feed spaces. That limitation is satisfied when the device, not the turbulence, is disposed in at least one of the feed spaces. The term “feed spaces” is specifically defined in claim 1 as being the space that is “disposed between every two membrane packs in the stack.” None of the holes 68 of Harlow are disposed between membrane packs in the stack and therefore none of the holes 68 are disposed in a “feed space” as that term is defined in the claim itself. Instead, the holes 68 in Harlow are disposed in members 66, which are secured to outer shell 10 at a substantial radial distance away from the periphery of the stack so as to prevent direct flow between the holes 68 and the spaces between the frames 25 in the stack. See column 8, lines 38-57 and Figs. 1, 2, and 7.

Second, the Examiner’s specific assertion that the holes 68 “would cause the feed gas to diffuse out into the cylindrical shell for flow through the membrane device” is wrong to the extent it implies the turbulence would find its way to a space between the membrane stacks. That assertion is flatly contradicted in Harlow itself. Harlow specifically states that “there is no direct path for flow of gas between the holes 68 and the passages between the frames 25”. See column 8, lines 51-53.

Applicants would like to point out that similar arguments were made for the first time in Applicants Response to Final Office Action dated August 4, 2005. However, the Examiner dismissed those arguments in the Advisory Action dated August 16, 2005 with the assertion that: “The arguments presented in this amendment are the same as already answered in the Final rejection.” It is respectfully submitted that most of the arguments presented in the Response to Final were presented for the first time. The response to the first Office Action did not include specific arguments with respect to the holes 68, because the Examiner only

identified the holes 68 as structure for causing turbulence for the first time in the Final Office action.

Withdrawal of the rejections to claims 1-8, 13, 14, 16, 18 and 19 thus is respectfully requested.

Rejections under 35 U.S.C. §103(a)

The issue presented is whether claims 9-12 should be rejected under 35 U.S.C. §103(a) as being unpatentable over Harlow in view of McBride et al. (U.S. 3,336,730) and whether claim 17 should be rejected under 35 U.S.C. §103(a) as being unpatentable over Harlow in view of WO 01/70376.

McBride et al. describes a hydrogen continuous production method and apparatus.

WO 01/70376, which is discussed in Applicant's specification at paragraphs [0007] and [0008], describes a membrane module having a parallel flow that contains a plurality of flat membrane packs. A plurality of these membrane packs are stacked on top of one another forming a compact stack having flat lateral surfaces, feed spaces for reformat gas being kept open between the individual membrane packs using sandwiched feed frames.

Applicants submit that Harlow, in addition to not describing the feature of a device for creating gas turbulence disposed in at least one of the feed spaces, also does not suggest that feature. In fact, to the extent that Harlow holes 68 are deemed to be devices for causing turbulence, Harlow actually teaches away from Applicants invention by teaching that those devices be disposed at a substantial radial distance from the stack periphery so that "there is no direct path for flow of gas between the holes 68 and the passages between the frames 25". See Harlow column 8, lines 51-53. Applicants respectfully submit that neither McBride et al. nor WO 01/70376 cures the deficiency of Harlow. Like Harlow, neither McBride et al. nor WO 01/70376 suggests any device for creating turbulence disposed in at least one feed space between two membrane packs in the stack.

Thus withdrawal of the rejections under 35 U.S.C. §103(a) to claims 9-12 and 17 is respectfully requested.

CONCLUSION

It is respectfully submitted that the application is in condition for allowance.
Favorable consideration of this appeal brief is respectfully requested.

Respectfully submitted,

DAVIDSON, DAVIDSON & KAPPEL, LLC

By: 

William C. Gehris, Reg. No. 38,156
(signing for Thomas P. Canty, Reg. No. 44,586)

DAVIDSON, DAVIDSON & KAPPEL, LLC
485 Seventh Avenue, 14th Floor
New York, NY 10018
Tel: (212) 736-1940
Fax: (212) 736-2427



Application No.: 10/613,557
Appeal Brief dated November 8, 2005

APPENDIX A:

PENDING CLAIMS 1-14 AND 16-19 OF U.S. APPLICATION SERIAL NO. 10/613,557

Claim 1: A membrane module for hydrogen separation, comprising:

a stack of flat membrane packs disposed adjacent one another so as not to exert a force on one another, a feed space for a reformat gas disposed between every two membrane packs in the stack, each membrane pack having a pair of membrane assemblies and a support structure disposed between the pair of membrane assemblies, each membrane assembly including a hydrogen-selective flat membrane supported by at least one membrane frame;

a rotationally symmetrical pressure shell enclosing the stack of flat membrane packs; and

a device for creating gas turbulence disposed in at least one of the feed spaces.

Claim 2: The membrane module as recited in claim 1, further comprising a membrane pack holder having a plurality of openings for discharging a permeate gas and wherein the membrane packs have at least one straight edge attached to the membrane pack holder.

Claim 3: The membrane module as recited in claim 2, wherein the membrane pack holder forms a base that is attached to the rotationally symmetrical pressure shell.

Claim 4: The membrane module as recited in claim 3, wherein the membrane pack

holder has a circular shape and the rotationally symmetrical pressure shell has a cylindrical shape.

Claim 5: The membrane module as recited in claim 2, wherein the support structure of each membrane assembly includes a pair of perforated support foils and a support plate disposed between the pair of support foils, the support structure supporting the membrane of a respective membrane assembly against a trans-membrane pressure differential, the support plate containing plurality of straight channels running parallel to one another and to the membrane.

Claim 6: The membrane module as recited in claim 5, wherein the plurality of straight channels communicates with the plurality of openings in the membrane pack holder.

Claim 7: The membrane module as recited in claim 5, wherein each support plate is made of sheet metal including multiple bends so as to form the channels.

Claim 8: The membrane module as recited in claim 5, wherein each support plate is made of sheet metal including multiple webs for forming the channels.

Claim 9: The membrane module as recited in claim 1, wherein an inner edge of each membrane frame has the form of a rectangle with rounded corners.

Claim 10: The membrane as recited in claim 9, wherein each membrane is welded in a gastight manner along edges of the membrane onto the at least one membrane frame.

Claim 11: The membrane module as recited in claim 1, wherein each membrane frame facing the reformat gas includes inner rims having rounded membrane-side edges.

Claim 12: The membrane module as recited in claim 1, a flat surface of one of the at least one membrane frames of each membrane assembly includes a channel extending around an inner edge of the membrane frame, the channel being accessible for a hold-down for pressing the membrane into the channel during welding.

Claim 13: The membrane module as recited in claim 1, wherein each membrane frame includes steel having a coefficient of heat expansion equal to or less than a coefficient of heat expansion of the membrane.

Claim 14: The membrane module as recited in claim 1 further comprising an upper gastight plate, a lower gastight plate, an upper feed space disposed on an uppermost membrane pack of the stack and a lower feed space disposed on the lowermost membrane pack, the upper and lower feed spaces having a same size as the feed spaces disposed between every two membrane packs, the upper and lower feed spaces being delimited by the upper and lower gastight plates.

Claim 15 (cancelled)

Claim 16: The membrane module as recited in claim 1, wherein the device includes a plate-shaped component made of a porous material at least partially filling the feed space.

Claim 17: The membrane module as recited in claim 1, further comprising a high temperature catalyst stage, disposed upstream from the stack of membrane packs and within the pressure shell.

Claim 18: The membrane module as recited in claim 1, further comprising an insulating material at least partially filling a space between the stack of membrane packs and the rotationally symmetrical pressure shell.

Claim 19: The membrane module as recited in claim 2, further comprising a gas collector extending transversely to the openings in the membrane pack holder on a side of the membrane pack holder facing away from the pressure shell.

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APPENDIX B

Evidence Appendix under 37 C.F.R. §41.37 (c) (ix):

No evidence pursuant to 37 C.F.R. §§1.130, 1.131 or 1.132 and relied upon in the appeal has been submitted by appellants or entered by the examiner.

APPENDIX C

Related proceedings appendix under 37 C.F.R. §41.37 (c) (x):

As stated in “2. RELATED APPEALS AND INTERFERENCES” of this appeal brief, appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board’s decision in this appeal.